Water Quality Report

2021 | Based on data collected in 2020

TRUSTED-EXCELLENCE & VALUE

Once again, Norfolk tap water met or exceeded quality and health standards.

THE CITY OF NORFOLK UTILITIES

A Message from your Water Utility

The City of Norfolk Department of Utilities is committed to providing residents and businesses throughout the city with top-quality water service.

Once again in 2020, Norfolk tap water met all federal and state requirements.

Utilities' employees are on call 24 hours a day, 365 days a year to ensure that you always have access to healthy Norfolk drinking water. The Water Quality Report is distributed annually to inform our customers that we are meeting all water quality guidelines set forth by the Environmental Protection Agency.

For questions regarding this report, contact the Norfolk Water Quality Lab at 757-441-5678. For more information about decisions affecting your drinking water quality, you may attend Norfolk city council meetings. For times and agendas, call the city clerk's office at 757-664-4253 or visit www.norfolk.gov.

Sharing This Report

Please share this report with all people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail. To receive a printed copy of this report, please call 664-6701 or email utpublicinfo@norfolk.gov.

People with Special Health Concerns

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS and other immune system disorders, some elderly and infants can be particularly at risk from infections. These individuals should seek advice about drinking water from their health care providers.

U.S. Environmental Protection Agency (EPA)/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline: (800) 426-4791.

Este informe contiene informaci0n muy importante sobre el agua potable que consume. Si tiene alguna pregunta sobre este informe, comuníquese con el Departamento de Servicios Públicos al (757) 441-5678..

Norfolk Department of Utilities is an active member of:

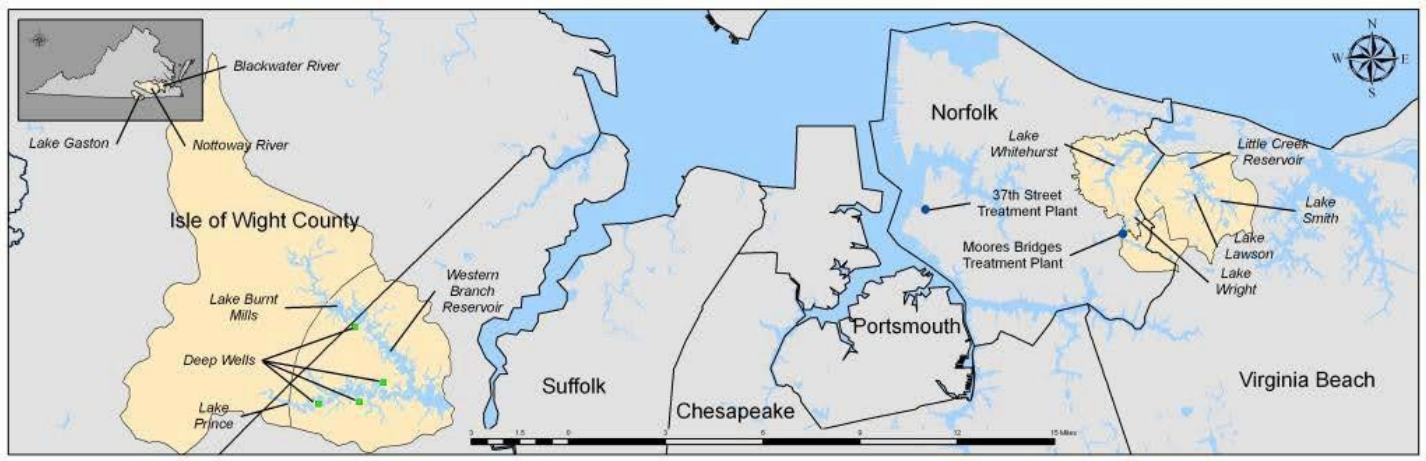
American Water Works Association VirginiaSection

The city of NORFOLK and askHRgreen.org

WORKING TOGETHER FOR A GREENER HAMPTON ROADS

Where Does Norfolk's Drinking Water Come From?

Norfolk obtains its raw (untreated) water from eight reservoirs, two rivers and four deep wells. The map below shows the location of each of your water sources. From these sources, raw water is pumped to one of the Department of Utilities' two water treatment plants, where it is filtered and disinfected. Once tested to meet water quality standards, Norfolk drinking water is pumped on demand to your tap.



Safeguarding the Water You Drink

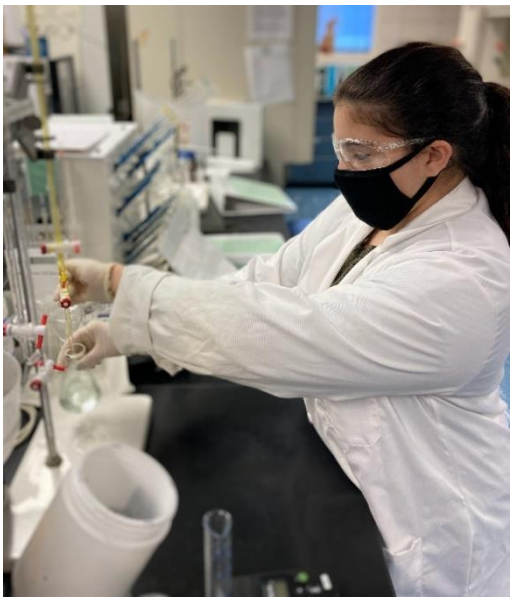
The protection of our water resources, including our drinking water reservoirs, is directly related to how we manage and protect the land around them. The water in the reservoirs comes from direct rainfall, but it also comes from the water that falls in the drainage area or watershed. This water flows across streets and driveways, off rooftops, across manicured lawns, through gardens and may finally enter the reservoir or lake through a storm pipe or ditch.

As the water travels across all of these areas it picks up pollutants - fertilizers, oil, gasoline, soda cans, paper cups, pet waste. Each of these pollutants can have a negative impact on the water, from something as simple as floating litter to more complicated issues that affect wildlife and water quality.

The land the water flows across on this journey and the waterways that receive it are called a watershed.

Visit AskHRGreen.org for more information.

Committed to Quality. Committed to You.



The Norfolk Department of Utilities consistently produces high-quality drinking water that achieves state and federal water quality requirements.

In 2019, the newly named Kristen M. Lentz (37th St.) and Moores Bridges (MB) Water Treatment Plants earned Virginia Water Treatment Plant Performance awards. This award is given to water plants that meet stringent standards for filtration process control and water clarity and demonstrate excellence in their day-to-day operations. MB received a silver award for six consecutive years of achieving these standards, and 37th St. received a bronze for three straight years of excellence.

MB also received the Hampton Roads Sanitation District (HRSD) Pretreatment Excellence and Pollution Prevention Platinum Award for six consecutive years of exemplary permit compliance and outstanding pollution prevention. The U. S. Environmental Protection Agency (EPA) has recognized HRSD's pretreatment program as one of the nation's best. Norfolk's efforts focus on reducing waste (or its toxicity) at the source and before its water plants discharge into HRSD's system. This helps to protect waterways and other natural resources.

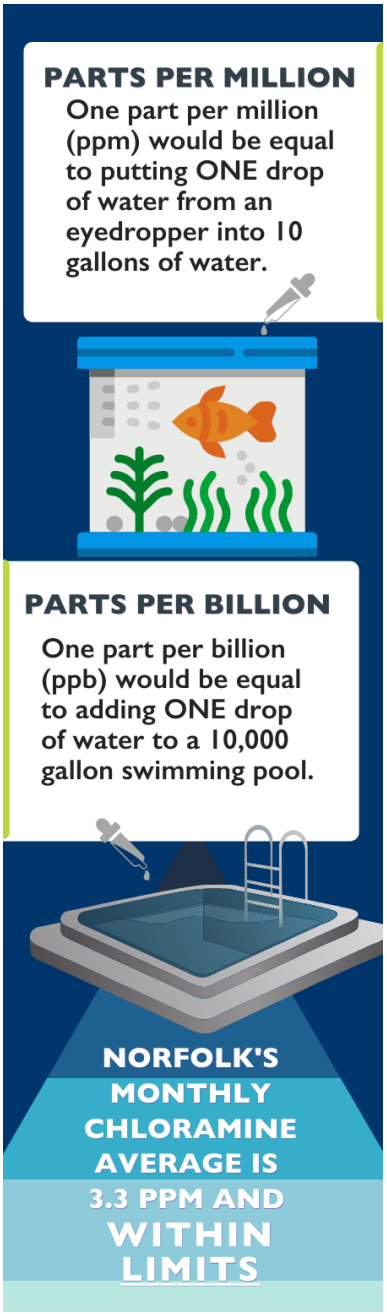
Chlorine – *A little goes a long way.*

Chlorination is a method used to disinfect water. This method was used over a century ago and is still used today!

Microorganisms are found in raw (untreated) water from rivers, lakes, and groundwater. Not all microorganisms are harmful to human health, but some could cause diseases in humans. These are called pathogens, and they can cause waterborne diseases.

State and federal laws require the disinfection of the water supply, and the EPA and health organizations consider chlorination as one of the best methods to combat these potential waterborne diseases.

Chlorination protects your water as it travels from our treatment plants to your home and ensures your water is safe and healthy to drink whenever you need it!



Our scientists work around-the-clock to ensure our drinking water is top-quality. Each month over 7,250 laboratory tests are completed.

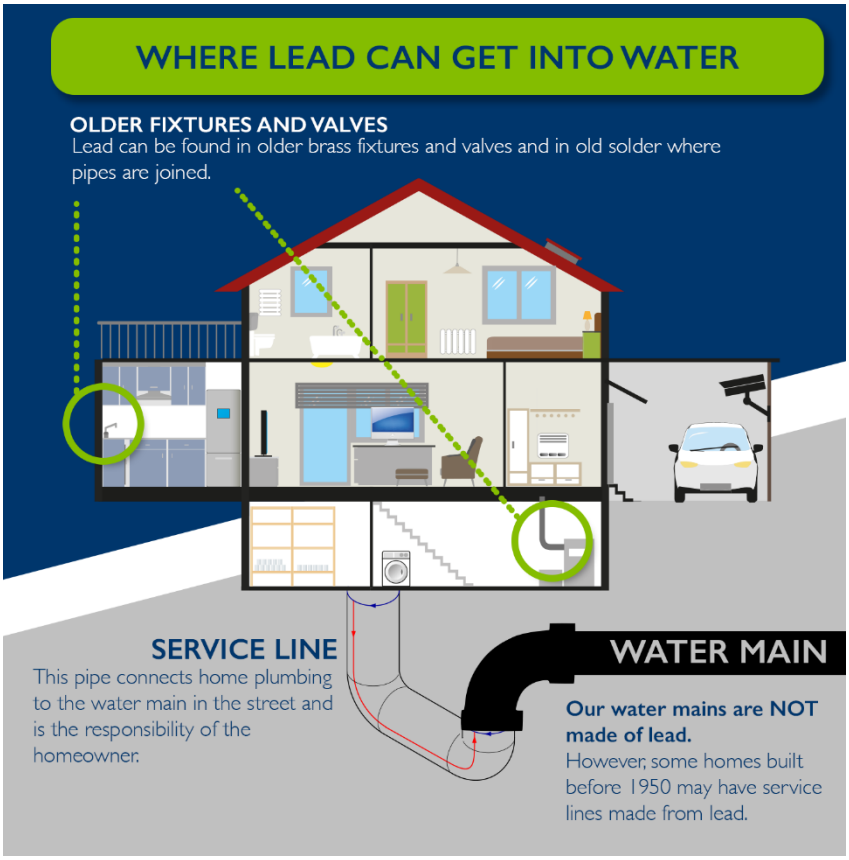
Lead in a Property's Plumbing - The drinking water delivered to your home meets all state and federal water quality standards.

How We Manage Lead

Our chemists continuously monitor drinking water to ensure our treatment helps keep lead out of water in buildings with lead plumbing. Every three years, Norfolk samples at least 50 homes for lead levels. These samples are a required part of the EPA's Lead and Copper Rule, which was created in 1992, to make sure that our corrosion control treatment is working.

Required by Federal law, Norfolk's corrosion control program has been in place for over three decades. It minimizes the release of lead from service lines, indoor pipes, fixtures, and solder by creating a coating designed to keep lead from leaching into the water.

To date, sampling results show that our treatment is controlling corrosion in our customers' plumbing.



Lead Testing

The Norfolk Department of Utilities conducted a regulatory lead testing program from June through September 2020. Results from the 2020 round of testing show Norfolk complies with the federal Lead and Copper Rule and can be found in the table on page 8.

Concerned About Lead In Your Pipes?

If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426- 4791 or www.epa.gov/safewater/lead.

Monitoring Water Quality: **What Do We Look For?**

Drinking water sources (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive material. It can also pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source (raw) water include:

• Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

• Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

• Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

• Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In 2001 the Hampton Roads Planning District Commission conducted a study on all the raw water sources in the area, including Norfolk's, to determine the susceptibility of reservoirs, rivers, and wells to contamination. Norfolk's susceptibility has been rated high. Norfolk's water treatment process ensures you receive high-quality treated tap water that meets all Federal Safe Drinking Water Act requirements. For a copy of this study, contact Norfolk's Water Quality Lab at 757-441-5678.

To ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limitations for contaminants in bottled water which must provide the same protection for public health. Drinking water, including bottled water, may reasonably contain slight (trace) amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk.

Your Water Meets All Standards!

The EPA and Virginia Department of Health water quality standards guide the craftsmanship of Norfolk tap water. And once again in 2020, Norfolk tap water met or exceeded those standards.

Nearly 87,000 annual water quality tests were conducted at reservoirs, treatments plants, homes and throughout the distribution system. None of the tests reported elevated levels of substances identified by drinking water standards as potentially harmful to public health.

convenient, healthy, economical & top quality.
NORFOLK TAP WATER

0 **Health and Quality Violations**

16 **Substances detected but within limits**

120 **Additional substances tested for but not found**

And Water Hardness is Just right!

Water hardness is not a health hazard, but it can be a nuisance. Norfolk's water averages in the range between soft and slightly hard. This means there is enough hardness for soaps and detergents to work properly, yet not too much to interfere with most applications.

CY2020 Consumer Confidence Report Data

Below are items we test for in drinking water. These samples were taken in 2020.

Regulated Substances

Substance	Likely Source	Norfolk's Measured Range	Norfolk's Highest Level	Norfolk's Average Level	National MCL	National MCLG	Unit	Meets EPA Standards
Atrazine	Agricultural Runoff	ND – 0.07	0.07	ND	3	3	ppb	✓
Barium	Erosion of natural deposits	0.03 – 0.05	0.05	0.03	2	2	ppm	✓
Chloramine	Drinking water disinfectant	1.5 – 4.2	3.4 [1]	3.3	4 [2]	4 [3]	ppm	✓
Fluoride	Added to prevent tooth decay	0.1 – 0.9	0.7 [4]	0.6	4	4	ppm	✓
Gross Beta	Erosion of natural deposits	3	3	3	50 [5]	0	pCi/L	✓
Nitrate as Nitrogen	Erosion of natural deposits, runoff	0.04 – 0.28	0.28	0.16	10	10	ppm	✓

[1] Highest quarterly average for calendar year [2] MRDL [3] MRDLG [4] Highest monthly average for calendar year

[5] EPA considers 50 pCi/L to be the level of concern for Beta particles

Substance	Likely Source	Percent Removal [1]	Range	National MCL	National MCLG	Unit	Meets EPA Standards
Total Organic Carbon	Occurs naturally in the environment	53% removal (45% is required)	45 – 68 percent removal	TT	n/a	%	✓

[1] Running Annual Average, calculated quarterly

Substance	Likely Source	Norfolk's Range (Individual Results)	Norfolk's Average Level	Norfolk's Highest Quarterly Locational Running Annual Average	Quarterly Running Annual Average		Unit	Meets EPA Standards
					National MCL	National MCLG		
Haloacetic Acids (HAA5)	Disinfection process byproduct	19 – 34	26	31	60	0	ppb	✓
Trihalomethanes (TTHM)	Disinfection process byproduct	29 – 57	45	48	80	0	ppb	✓

Turbidity

Substance	Likely Source	Norfolk's Lowest Monthly % of Samples Meeting Limit	Norfolk's Highest Level (NTUs)	National MCL	National MCLG	Unit	Meets EPA Standards
Turbidity	Soil runoff	100%	0.29	< 1.0 maximum, and ≤0.3 95% of the time	n/a	NTU	✓

Lead and Copper in Customers' Homes (data from 2020 triennial sampling)

Norfolk has extremely low lead levels in its drinking water system. Because of this, the EPA has placed Norfolk on areduced monitoring schedule. No lead was detected at the monitoring level during this monitoring period.[1]

Substance	Likely Source	Norfolk's Results[1]	Norfolk Homes Exceeding Action Level	National Action Level	Unit	National MCLG	Meets EPA Standards
Lead	Household plumbing corrosion	< 2.5	0	15	ppb	0	✓
Copper	Household plumbing corrosion	0.09	0	1.3	ppm	1.3	✓

[1] Lead and copper compliance is measured at the 90th percentile of all samples taken during the triennial sampling period.

If present, elevated lead levels can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Norfolk Department of Utilities is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure are available from the Safe Drinking Water Hotline (800) 426-4791- http://www.epa.gov/safewater/lead.

Secondary and Unregulated Monitored Substances

Substance	Likely Source	Norfolk's Range	Norfolk's Highest Level	Norfolk's Average Level	National SMCL	Unit
Aluminum	Erosion of natural deposits; also from use of chemicals at water treatment plant	0.01 – 0.05	0.05	0.02	0.20	ppm
Chloride	Natural in environment	12 – 21	21	16	250	ppm
Foaming Agents	Natural in environment	5 – 13	13	7	500	ppb
Iron	Natural in environment	ND – 0.04	0.04	ND	0.3	ppm
pH	Adjusted during water treatment process	7.4 –7.9	7.7[1]	7.7	6.5 – 8.5	pH units
Sodium	Natural in environment; also from use of chemicals at water treatment plant	10 – 22	22	14	n/a[2]	ppm
Sulfate	Natural in environment; also from use of chemicals at water treatment plant	24 – 34	34	27	250	ppm
Total Dissolved Solids	Natural in environment	39 – 20	120	83	500	ppm
Zinc	Natural in environment; also from use of chemicals at water treatment plant	0.01 – 0.46	0.46	0.20	5	ppm

[1] Highest monthly average for calendar year [2] For physician-prescribed "no salt diets," a limit of 20 ppm is suggested

Additional Information

Substance	Norfolk's Range	Norfolk's Average Level	Unit
Alkalinity	13 – 39	26	ppm
Ammonia	ND – 0.9	0.1	ppm
Hardness	28 – 61	42	ppm
Silica	3 – 6	5	ppm

Unregulated Contaminant Monitor Rule

The EPA uses the Unregulated Contaminant Monitoring (UCM) program to collect data for contaminants suspected to be present in drinking water but do not have health-based standards set under the Safe Drinking Water Act (SDWA). Every five years, the EPA reviews the list of contaminants and selects no more than 30 for a nationwide drinking water survey to provide occurrence data for potential future regulation. The final sampling for UCMR4 occurred in November 2018.

Substance	Likely Source	Norfolk's Range	Norfolk's Highest	Norfolk's Average Level	National MCL	Unit
Total HAA6Br	Byproduct of disinfection process	5.8 – 10	10	7.3	n/a	ppb
Total HAA9	Byproduct of disinfection process	20.6 – 45	45	32.1	n/a	ppb
Substance	**Likely Source**	**Norfolk's Range**	**Norfolk's Highest**	**Norfolk's Average Level**	**National SMCL**	**Unit**
Manganese	Natural in environment	ND – 0.004	Level 0.004	0.001	0.050	ppm

For more information on the UCMR program, visit EPA online at https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule.

Pharmaceuticals & Source Water

Pharmaceuticals can enter the waterways through excretion from the body and the practice of improper disposal methods, such as flushing unused or expired medications down the toilet.

Everyone can help keep unused pharmaceuticals out of the water supply by properly disposing of unused medications.

A permanent drug drop-off is located at Norfolk's Public Safety Building, 811 E. City Hall Ave.

If disposing at home, discard with the trash. Always remove personal information, seal in a container and disguise the contents by mixing with coffee grounds or kitty litter.

Per- and polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a group of human made chemicals. PFAS have been used in a variety of industries and consumer goods. Initial research suggests that exposure to PFAS may lead to human health concerns.

There are no federal or state drinking water regulations for PFAS in Virginia. However, in 2016 the EPA set a health advisory level as guidance. Treated water samples have been taken from all Norfolk drinking water treatment plants as part of EPA's national sampling program in 2013, and again in 2020. All samples were well below the EPA health advisory level.

Glossary

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. The action level is not based on one sample; instead,it is based on many samples.

Alkalinity: A measure of the water's ability to resist changes in the pH level and a good indicator of overall water quality. Although there is no health risk from alkalinity, we monitor it to check ourtreatment processes.

E. coli (Escherichia coli): A type of coliform bacteria that is associated withhuman and animal fecal waste.

gpg (grains per gallon): A unit of water hardness. One grain per gallon is equal to 17.1 parts per million.

MCL (Maximum Contaminant Level):

The highest level of a contaminant that is allowed in drinking water. MCLs are set asclose to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGsallow for a margin of safety.

mg/L (Milligrams per liter):
One milligramper liter is equal to one part per million.

MRDL (Maximum Residual Disinfection Level): The highest level of disinfectant that is allowed in drinking water. The addition of a disinfectant is necessary for the control of microbial contaminants.

MRDLG (Maximum Residual DisinfectionLevel Goal): The level of a disinfectant in drinking water below which there isno known or expected risk to health.

MRDLGs do not reflect the benefits of theuse of disinfectants to control microbial contaminants.

Minimum Residual Disinfectant Level: The minimum level of residual disinfectant required at the entry point to the distribution system.

ND - Not Detected in the water

NTU (nephelometric turbidity units): Turbidity is measured with an instrument called a nephelometer. Measurements aregiven in nephelometric turbidity units.

Pathogens: Bacteria, virus, or other microorganisms that can cause disease.

pCi/L (Picocuries per liter): A measure of radioactivity.

ppm (parts per million): Denotes 1 part per 1,000,000 parts, which is equivalentto two-thirds of a gallon in an Olympic- sized swimming pool.

ppb (parts per billion): Denotes 1 part per 1,000,000,000 parts, which is equivalentto half a teaspoon in an Olympic-sized swimming pool.

µg/L (Microgram per liter): One microgram per liter is equal to one partper billion.

ppt (parts per trillion): Denotes 1 part per 1,000,000,000,000 parts, which is equivalent to one drop in 20 Olympic-sized swimming pools.

Total Coliform: Coliforms are bacteria thatare naturally present in the environment. Their presence in drinking water may indicate that other potentially harmful bacteria are also present.

HAAs (Haloacetic Acids):
A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

TOC (Total Organic Carbon):
A measure ofthe carbon content of organic matter. This measure is used to indicate the amount of organic material in the water that could potentially react with a disinfectant to form disinfection byproducts.

TTHMs (Total Trihalomethanes):
A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

Treatment Technique: A required process intended to reduce the level of acontaminant in drinking water.

Turbidity: A measure of the clarity of water related to its particle content. Turbidity serves as an indicator for the effectiveness of the water treatment process. Low turbidity measurements, such as ours, show the significant removal of particles that are much smaller than canbe seen by the naked eye.

WTP: Water Treatment Plant

Do Your Part to Keep Our Waters Clean!

Don't Pollute!

Water that enters our storm drains often flows directly to our local streams and rivers. Do your part to help protect our waterways:

- Always recycle or dispose of household hazardous waste properly
- Don't pour motor oil, antifreeze or other toxic materials down storm drains, which connect to the City's sewer system
- Don't flush paint thinners, insect sprays, herbicides and other harmful chemicals down the toilet or put them down the sink

Contact Waste Management to get a schedule for household hazardous materials drop-off events where you can dispose of these materials safely without polluting your drinking water supply.

Don't flush wipes, whether made from natural or synthetic materials, down the toilet because they do not instantly dissolve like toilet paper. In homes, wipes can cause interior pipes to clog and sewage to back-up into homes or the street.

It is also important NOT to discard rubber gloves, masks and any other litter onto streets or sidewalks because they can end up in our local waterways or at our wastewater treatment plants, where they can clog the infrastructure. All litter and waste should be appropriately discarded into a trash can.

Get Involved:

We're looking for excellent people to work with.

We participate in public and community events, including presentations made at schools, civic leagues, homeowner and environmental association and other environmental celebrations.

If you would like to help protect your water supply or watershed, please call the Department of Utilities at 664-6700 or visit our website at www.norfolk.gov/watersense.

Contact Norfolk Utilities Public Information

(757) 664-6701
utpublicinfo@norfolk.gov

Important Numbers & Websites:

Department of Utilities
(757) 664-6700
www.norfolk.gov/utilities

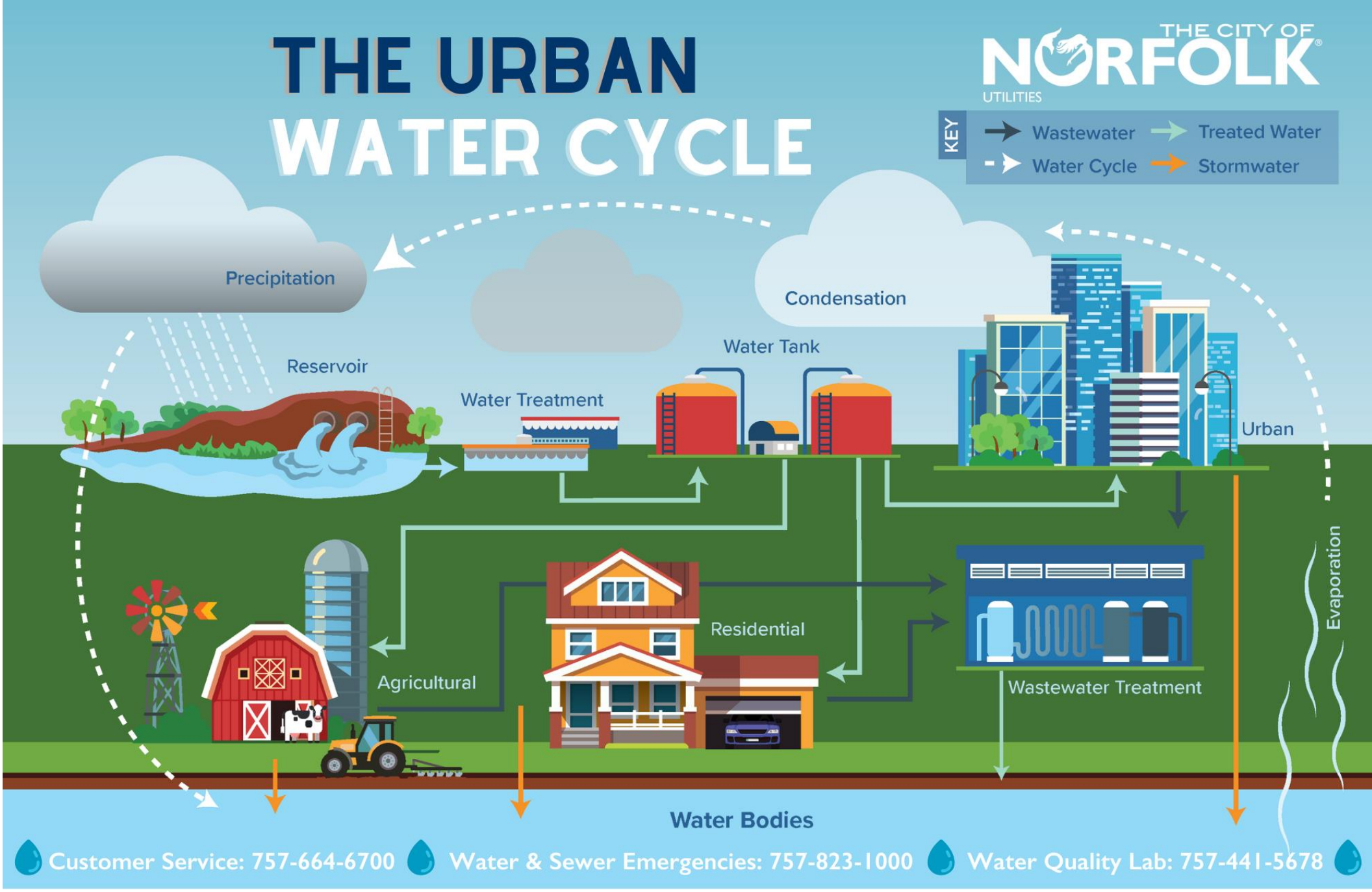
Reservoir Management (Boating)
(757) 441-5678, ext. 253
www.norfolk.gov/584/Reservoirs

Water Quality
(757) 441-5678
www.norfolk.gov/tap-water

Water & Sewer Main Breaks
(757) 823-1000
www.norfolk.gov/4759/Report-a-Problem

Stormwater
(757) 823-4000
www..norfolk.gov/stormwater

Keep Norfolk Beautiful
(757) 441-1347
www.norfolk.gov/knb



Norfolk is a proud partner of the askHRgreen program. By partnering with others throughout the region, Norfolk hopes to inspire environmental stewardship among all citizens to protect our waterways and local resources on a greater scale. Visit www.askHRgreen.org and begin helping our waterways, infrastructure and recycling efforts through information and inspiration sharing.